

LAMS--1066

UNCLASSIFIED

~~SECRET~~

UNCLASSIFIED - SAB2000R3673000

UNCLASSIFIED

RESTRICTED DATA

This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to administrative and Criminal Sanctions.

~~SECRET~~

CLASSIFICATION	9/21/95	0
EXEMPTION CODE	4B	
EXEMPTION AUTHORITY	1-22	
EXEMPTION DATE	9/21/95	
EXEMPTION OFFICER	OC/...	
OTHER (SPECIFY):		

~~SECRET~~
~~SECRET~~
UNCLASSIFIED

LOS ALAMOS SCIENTIFIC LABORATORY
of
THE UNIVERSITY OF CALIFORNIA

LAMS-1066

January 25, 1950

ATOMIC WEAPON DATA
SIGMA CATEGORY 1
per R.D. [unclear] 9/4/81
This document consists of 20 pages

DADDY POCKETBOOK

A summary of lectures by Edward Teller
written by Harris Mayer,
with illustrations by George Gamow.

RESTRICTED DATA

This document contains Restricted data
as defined in the Atomic Energy Act of
1946. Unauthorized disclosure subject to
Administrative and Criminal Sanctions.

UNCLASSIFIED

WEAPON DATA

~~SECRET~~

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1. REVIEW DATE: 9-22-95	2. REFERENCE NUMBER(S):
3. AUTHORITY: E.O. 12958	4. CLASSIFICATION: UNCLASSIFIED
5. NAME: DADDY POCKETBOOK	6. CONTAINS FOREIGN DISSEM INFO: NO
7. REVIEW NUMBER: 9-22-95	8. DECLASSIFICATION CANCELLED: NO
9. AUTHORITY: E.O. 12958	10. SECURITY INFO BRACKETED: NO
11. NAME: [unclear]	12. OTHER (SPECIFY):

I. INTRODUCTION

This Report gives a review of the processes in Daddy, i.e., in a bomb powered by the thermonuclear reaction of deuterium. It is essentially a summary of two lectures given by Edward Teller, with illustrations by George Gamow, before the Technical Council.

[redacted] The fuse will be discussed later (Section IV).

Once a portion of the main charge is ignited, the thermonuclear reaction

[redacted]

[redacted] Eventually, much of the energy appears in blast.

II. THE NUCLEAR REACTIONS

[redacted]

~~SECRET~~

UNCLASSIFIED

DCI

The explosion of a 40-megaton Daddy in an air burst³ (1 to 3 miles above ground) would cause a blast wind whose positive phase lasts from 10 to 15 seconds. Overpressure would be as much as 20 psi 9000 yards from the center of the explosion, with wind velocities of 300 mph. Following the outward-going blast wind would be strong inward currents, as air rushed back to fill the vacancy left by the rising column of hot gases resulting from the explosion. These after-winds would have velocities of 100 mph at 20,000 yards from the center of the explosion, and higher velocities closer.

Accompanying the blast would be a heat wave of some 40 seconds' duration containing, roughly, one-third of the energy released. The heat could char wood at 20 miles and cause first-degree skin burns on unprotected personnel at 17 miles.

Additional effects of the explosion would be the release of nuclear radiations--neutrons and gamma-rays--and the formation of an enormous quantity of induced radioactivity.

Damage effects in a typical city due to the explosion of a 40-megaton Daddy are illustrated in Fig. 6. The accompanying table also gives these results.

³The figures quoted on Daddy effects are taken from the report of F. Reines and B. R. Suydam, LAMS-993 (Nov. 18, 1949).

UNCLASSIFIED

~~SECRET~~

~~SECRET~~

UNCLASSIFIED

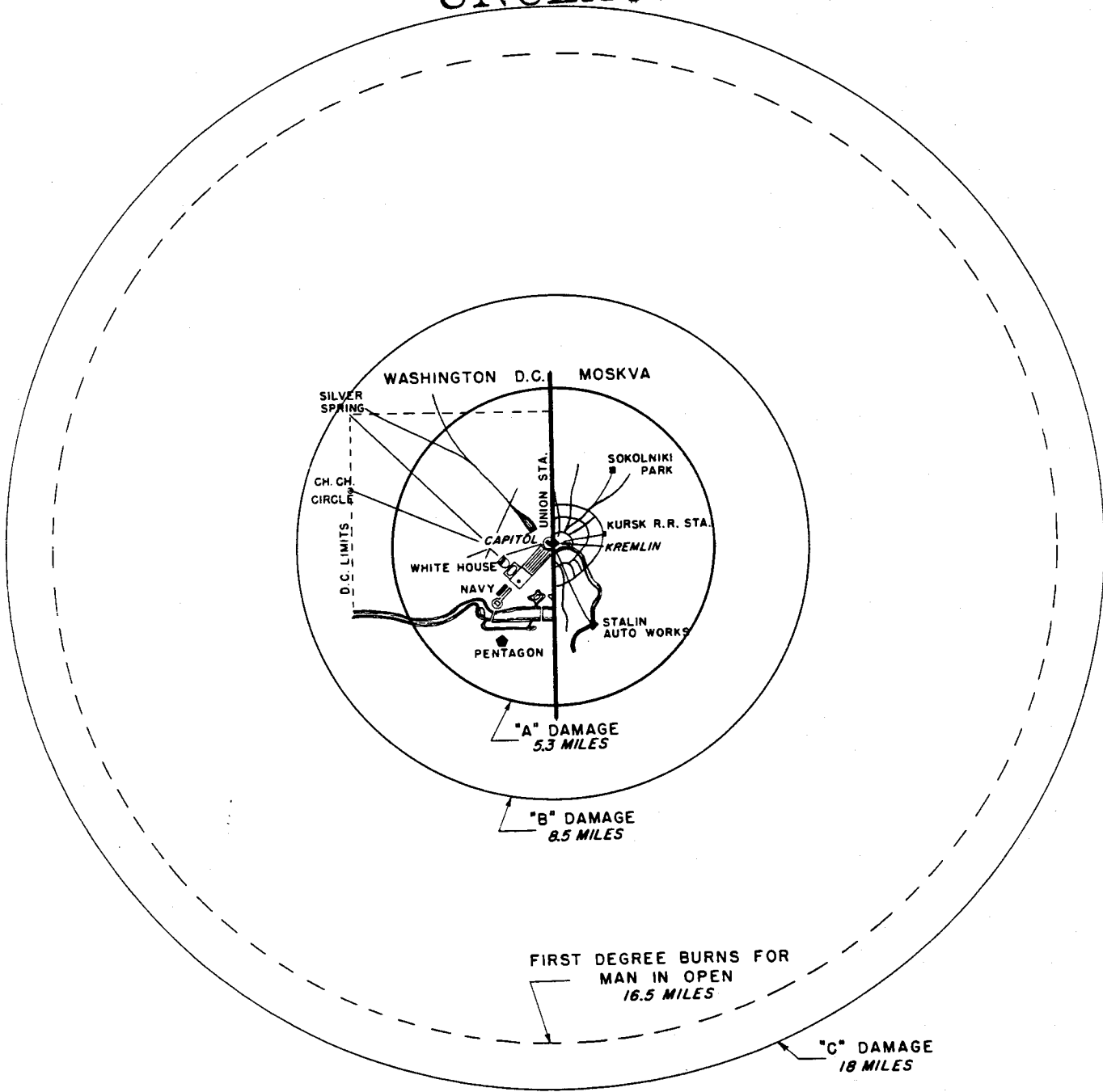


FIG. 6 DAMAGE RADII OF DADDY
(40 MEGATONS - 1 1/2 MILE HIGH AIR BURST)

UNCLASSIFIED

~~SECRET~~